

PERSONAL SAFETY
during

LIGHTNING

Training Programme Contents

- Lightning -Statistics and fundamentals
- Myths & Facts
- Un -Safe & Safe areas
- Safety crouching position
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Lightning Accidents

- 2 engineers die while inspecting road construction in south India
- A boy was struck by lightning in a Texas football field but survived
- Parents killed, 3 children injured when they sought shelter under an isolated tree
- 3 men struck by lightning while installing a chain link fence
- 2 caddies die of lightning in a golf course

Lightning - Facts

- Virtually anything can get struck by lightning!
 - Tree / Animal / Humans / Building / Aircraft / Ship / Bush / Light pole / Process Plant / Crane / Truck
- Lightning strikes are absolutely **UN-PREDICTABLE!!!!**
 - **Place of strike / Intensity / Destruction Potential**
- **Lightning discharges produces very high current!!- Kilo Amperes**

Lightning - Facts

- **25% of Lightning victims die!**
- **Lightning damage probability is more in summer**
- **85% of the lightning strike victims are children and young men (10 to 35 years old) engaged in work & recreation (US data)**
- **14 % under tree lightning strike deaths**
- **70% strikes happen between June & August**

Lightning - Facts

- **Most lightning strikes occur between 2 pm to 6 pm.**
- **Lightning strikes are UN-Predictable!**
 - **During a football match, one team of 11 were struck by lightning whereas the other team was untouched!**

Lightning Myth - 1

- Lightning strikes only on tall objects!

But the probability of a tall object getting struck is more! In African animal parks, more **Giraffes** die of lightning than any other animal!

Lightning Myth - 2

Lightning Never strikes the same place twice!

- EMPIRE STATE BUILDING WAS STRUCK 25 TIMES!!!!

Lightning Myth - 3

- Standing under a tree during lightning is safe!

Lightning Myth - 4

You are completely safe inside a metal bodied car!

- Not completely true! So long as you jump out or stay inside, you are safe. **DONOT STEP OUT!** Safest thing to do is not to get into any vehicle.

UNSAFE AREAS

- **Small structures including huts & rain shelters.**
- **Nearby metallic objects like fences, gates, instrumentation and electrical equipment, wires, and power poles.**
- **Also---AVOID isolated trees, AVOID water, AVOID open fields, AVOID using the (hard wired) telephone and headsets.**
- **Avoid being in or near high places (tanks / towers / stacks) or open fields or under isolated trees, under communication towers, flagpoles, metal fences, rivers**

UNSAFE AREAS

- When inside a building, avoid use of the telephone, taking a shower, washing your hands, electrical wiring, cable TV wiring, plumbing, being near windows & balconies
- Parking lots / Tennis Courts / Golf Courses / athletic fields / tents & temporary structures
- Near clotheslines, wire fences, overhead wires and rail-road tracks

SAFE AREAS

- Large metal-framed & enclosed structures
- **Lightning protected buildings**
- Fully enclosed metal vehicles, with rolled-up windows (avoid contact with metal surfaces outside or inside the vehicle)
- City Streets shielded by nearby buildings
- Underground shelters such as tunnels, caves
- Seek depressed areas / dense woods
- **Do not go out-of-doors or remain out, unless it is necessary**

LIGHTNING SAFETY CROUCH

- If hopelessly isolated from shelter during close-in lightning, adopt a low crouching position with feet together and hands on ears (**Crouching**).

Maintain lowest possible height



Lightning Safety Crouch

- SAFEST POSITION DURING THUNDERSTORMS IN THE CROUCHING POSITION!!! (when no shelters are available, in open areas)

Hair Rising!!!

This photograph of individuals with their hair standing on end is an indication that lightning is about to strike. This hair-raising slide was taken at Moro Rock in California's Sequoia National Park. Moments after this picture was taken these two people step aside, another person occupied this spot and was struck and

Lightning Safety Rating

- In order of descending safety where 10 is the best
- Lightning Certified Safe Shelter, Rating = (10)
- Lightning Protected Building, Rating = (9)
- Large enclosed substantially constructed building (the center of a low level interior room is better).
Rating = (7)
- An enclosed metal car, bus, airplane, train or tractor,
Rating = (3)
- The safety crouch position rating = (1/2)
- Outdoors, Rating = (0)

Rating from the 45th weather squadron for the Air Force

Mr. William P. Roeder, Chief Staff Meteorologist

Lightning *Safe Alert*

- Provides early warning of approaching lightning strikes from as far away as 40 miles
- Cost USD 80/-
- An audible alarm sounds when there's a strike and a corresponding LED light illuminates accordingly at lightning distances of 20-40 miles, 12-24 miles, 6-12 miles and within 6 miles.

Source: <http://www.weplay.com/lightning/>

Outdoor Lightning Safety Tips

- If you hear **thunder**, suspend all outdoor activities!
- If you see **Lightning**, seek a shelter immediately!
- **Vehicles:**
 - Cranes - lower boom, stop and driver to jump out of vehicle and move into a shelter
 - All trucks - Drivers to stop work, move into the shelter

Outdoor Lightning Safety Tips

- Those people who are working at heights - climb down and take shelter in a protected building / room or in the safe areas mentioned
- Avoid unnecessary exposure to lightning (go out only if absolutely essential!!!)
- Depend on the radio to keep updated of weather conditions

Lightning Pre-Cursors (Warning Signals)

- High Winds
- Heavy Rainfall
- Cloud cover / Cloudy Sky
- Use lightning warning devices

“Many casualties occur because people ignore these obvious precursors”

Components of a Lightning Evacuation Action Plan

- Designate a responsible person to monitor forecasted weather as well as to observe pre-cursors and to initiate evacuation when appropriate
- A protocol to be put in place to notify all persons at risk from lightning threat
- Define the evacuation route
- Identify the shelters / locations to be evacuated to
- All clear & evacuation signals to be identified
- Action plan to be periodically reviewed & drills to be conducted

Personal Lightning Safety Programme

- Designate a trained **supervisor / head worker** in all the outdoor work areas to execute the action plan.
- Observe the lightning precursors / tune to radio to local AM and listen for a crackling sound
- Follow the defined ***Lightning Action Plan***
- Exhibit outdoor lightning safety tips in the plant

First Aid

Recommendations

- **Re-locate the victim to a low lightning risk area**

- **Start resuscitation, if the victim is not breathing**

- **If no pulse is detected, start cardiac compression**

Most lightning victims can actually survive their encounter with

- **Take to a qualified doctor immediately**
lightning, especially with timely medical treatment

Being aware of lightning hazards itself is a big step towards lightning safety!!!!